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ABSTRACT

The investigators hypothesized that home environment variables--as measured by the Home Environment Review, administered upon entrance to kindergarten--account for the variance in children's reading achievement at the end of kindergarten, first, and second grade. One hundred fifty-three children representing a longitudinal, traced sample from two communities in the Florida Parent Education Follow Through Model were involved in the study. The first community, located in the rural northwestern United States, included a sample of 51 children, most of whom were white. The second sample was taken from a southwestern U.S. city and included 102 children, most of whom were black. Each child's parents were interviewed in their home by a trained para-professional who observed the home environment. The interviewer rated the home on nine dimensions: expectations for the child's schooling; awareness of the child's development; rewards for intellectual attainment; press for language development; availability and use of supplies for language development; outside learning opportunities; materials for learning in the home; reading press, and trust in school. Each child completed a standardized achievement test at the end of kindergarten, first, and second grade. Stepwise multiple regression analysis revealed that the home environment variables accounted for a significant portion of the variance in reading achievement at all three grade levels. (Author/MV)

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The Relationship Between Measures of Home Environment and School Achievement of Follow Through Children

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The Relationship Between Measures of Home Environment and School Achievement of Follow Through Children

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The importance of environment in learning has been well established. Lewin (1936) saw behavior in terms of person-environment interaction. Brunswik (1957) indicated that all factors included in the historic-geographic-physical environment should be regarded as significant in subsequent learning. The research relating environmental variables to learning is extensive. A number of variables have been investigated with results indicating the importance of environment as a manipulable factor in learning (Yarrow, 1970). One particular aspect of environment-learning research which has gained increasing attention is the attempt to relate particular home factors to school achievement.

Coleman's (1966) landmark Equal Opportunity Survey suggests that throughout the school years, family background is the single most important factor in determining pupil achievement. Studies linking measures of home environment to school achievement for typical children at various age/grade levels support Coleman's position (Dave, 1963; Weiss, 1969; Keeves, 1970; Hanson, 1975). Current studies of achievement in school subjects reported by the National Assessment (1972) reveal "deficits" for groups that were younger, black, lower in parental educational attainment, and located in extreme inner city or extreme rural areas. Greenberg (1972) found measures of home environment of black, urban ghetto children to be significantly linked to school achievement. Looking at both home and school variables for younger children in England and Wales, the Plowden

Committee (1967) found parents' socio-economic status to be a better predictor of achievement than were school variables while a "home literacy" factor which combined measures of attitudinal and behavioral items was found to be an even stronger predictor. In discussing a variety of social problems, including children's difficulty with school achievement, Caplan and Nelson (1973) stated that action taken to alleviate social problems is dependent upon the extent to which the causes are viewed as residing within individuals or in their environments.

Various aspects of parents' socio-economic status (SES) have been studied for their effects on school achievement. Lavin (1965) developed an index of SES which was capable of predicting achievement. Use of the index, however, is limited in home environment studies because the SES indicators lack the precise focus which is needed to determine specific aspects of home environment which contribute to school achievement. Commenting on Lavin's research Henderson (1972) notes that "Because SES measures are so gross and undifferentiated, they may well obscure more than they reveal." More recently, Walberg and Marjoribanks (1976) have reported significant relationships between more specific aspects of SES, father's education and occupation; measures of home environment and child achievement. Wolf (1964) developed a scale for measuring aspects of the home setting with sufficient specificity to overcome this problem. For Wolf, the important focus lay in identifying what parents did rather than what they were. He was able to relate measures of intelligence and achievement to home environment factors on the Wolf Scale.

Garber (1970) modified the Wolf Scale and developed the Home Environment Review (HER) consisting of 9 factors resident in the home setting: expectations for child's schooling, awareness of child's development, rewards for intellectual attainment, press for language development, availability and use of supplies for language development, learning opportunities

outside the home, materials for learning in the home, reading press, trust in school. Ware and Garber (1972) using the HER in a study of Head Start children reported that early school achievement was significantly related to home environment factors. Garber (1969) has stated that "What happens to the child in his home setting can effect his performance in school as much as any other set of variables."

Although a great deal of research has demonstrated significant relationships between home environment variables and school achievement, most of the research has involved cross-sectional sampling techniques. Few, if any, studies have investigated the longitudinal effects of home environment variables in accounting for variance in achievement of poverty children.

The hypothesis for this study was that the home environment variables measured by the Home Environment Review administered at the entrance to kindergarten do account for significant portion of the variance in children's reading achievement at the end of kindergarten, first and second grade. In essence the hypothesis predicted that children's home environment prior to school entrance age has a major influence on a child's school achievement even after the child has experienced three years of schooling.

Method

Sample. A total of 153 children were involved in the study. This total represents a longitudinal, traced sample from two communities in the Florida Parent Education Follow Through Model. Community I was located in a rural setting in northwestern United States and included a sample of 51 children. Community II was an urban setting in southwestern United States and included

a sample of 102 children. A majority of the children in Community I were white while a majority of the children in Community II were black.

Procedures and Instruments. Each child's parent was interviewed by a parent educator during the fall of 1971. The parent educator was a trained paraprofessional whose responsibility was to visit each participating home once a week. The parent educator received instructions to informally interview the parent and observe the home environment. Each parent educator then completed the Home Environment Review instrument by rating the home environment on nine dimensions: expectations for child's schooling; awareness of child's development; rewards for intellectual attainment; press for language development; availability and use of supplies for language development; learning opportunities outside the home; materials for learning in the home; reading press; and trust in school.

Each child was administered a standardized achievement test at the end of kindergarten, first and second grade. The Metropolitan Achievement Test (MAT) primer form, was used in kindergarten, while the MAT Primary I form was used in first grade. The California Achievement Test was administered at the end of second grade. Only reading achievement raw scores were analyzed. Total reading scores were used as the criterion variables for kindergarten and first grade samples. Vocabulary and comprehension scores were used for the second grade sample since a total reading score was not available.

Results

A stepwise multiple regression analysis for each community by grade level produced different results both in terms of the multiple correlation coefficient and the order in which variables entered the predictive equation. For example, at kindergarten in Community I a multiple correlation coefficient of .59 was obtained with all the predictor variables adding significantly to the predictive equation.

In Community II, however, a multiple correlation coefficient of .29 with only one predictor variable providing a significant contribution to the predictive equation for kindergarten children.

In both communities, however, a number of variables are significant contributors to the predictive equation with some variation across communities and across grade levels. When variables are considered as clusters it appears that reading press, press for language, and opportunities for learning are most commonly the best predictors of achievement across communities and grade levels.

In an attempt to clarify the most stable predictor-criterion relationships between samples, a second series of stepwise regression analyses were performed using the combined samples for the analysis at each grade level. Recognizing that this procedure minimizes the unique variance associated with each sample, the major concern at this point was to identify stable predictive relationships for each grade level.

The results of these analyses are reported in Table 1. Of the nine HER variables the best predictors of achievement across sites appear to be: materials for learning in the home (variable 7), learning opportunities outside the home (variable 6), and reading press (variable 8) and expectations for child's schooling at kindergarten and first grade; and press for language development (variable 4), materials for learning (variable 7) and awareness of child's development (variable 2) at the second grade level. These findings confirm our conclusions from the individual analyses of grade levels within separate communities.

Insert Table 1 about here

The lack of consistency across communities, however, was investigated further in order to determine the possible significance of unspecified variables within each community on variations in predictive equations. A series of forced regression analyses for each grade level were performed by combining samples from the two communities. In these analyses, the Home Environment Review variables were entered as a block. Community was entered as a second predictor with the interaction term (HER x Community) being the third predictor. By varying the order in which variables entered the equation, the unique contribution of each predictor was examined for statistical significance. These analyses yielded only one significant result which was a significant F value ($F_{9,133} = 2.00$, $p<.05$) for the Home Environment Review variables for the kindergarten grade level. Neither the Community nor the Community x HER interaction variables individually accounted for unique portions of variance in child achievements in the statistical tests.

Discussion

While previous research has suggested that home environment variables are significant predictors of academic achievement, the assumption that one dimension of the home environment may be the most important predictor across communities within a social class may be unfounded. The results indicate that reading achievement can be predicted from home environment variables, but that the most significant predictive variables do vary as a function of the community. Fluctuations in the amount of variance explained by the predictive equation may be due to a variety of factors including school curriculum, parental influence, or subcultural group differences.

This study supports a number of cross-sectional studies indicating a relationship between home environment variables and child achievement, and at the same time raises a number of methodological as well as educational

considerations, especially significant for intervention researchers. Most basic is the question of being able to reliably sample home environment variables with enough specificity to support educational strategies without an indepth, detailed analysis of a large number of home environment variables. The work of Walberg and Marjoribanks (1976) does confirm our notion that the home environment of a child does relate to his/her achievement in school and our conceptualization of those relationships based on empirical data. The educational utility of generalized measures of home environment, however, is at least questionable. Given the fact that similar longitudinal studies are now emerging, a reanalysis of home environment measures seems appropriate and particularly needed in early intervention research.

Table 1

Summary of Stepwise Regression Analysis for

Grade Level Groups Combined Across Communities

	Grade Level							
	Kindergarten		First Grade		Second Grade			
	Criterion: Total Reading		Criterion: Total Reading		Criterion: Vocabulary		Criterion: Comprehension	
Step Number	Variable Number+	Multiple R	Variable Number	Multiple R	Variable Number	Multiple R	Variable Number	Multiple R
1	*7	.257	*8	.214	*4	.299	*4	.287
2	*1	.274	*1	.226	*7	.340	*2	.322
3	*8	.281	*7	.234	*8	.366	*7	.345
4	*9	.285	*6	.248	*2	.382	*5	.370
5	*6	.289	*2	.253	*9	.394	*9	.381
6	*5	.292	3	.256	*5	.399	*8	.392
7	4	.296	5	.257	*3	.400	*3	.394
8	3	.298	9	.257	*6	.401	*1	.395
9			4	.258			*6	.395

+Variables were numbered as follows:
1= Expectations for child's schooling; 2= Awareness of child's development; 3= Rewards for intellectual attainment; 4= Press for language development; 5= Availability and use of supplies for language development; 6= Learning opportunities outside the home; 7= Materials for learning in the home; 8= Reading press; 9= Trust in school.

*The F value for the ANOVA testing the regression sum of squares against the residual sum of squares was significant at this step.

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Abstract

The Home Environment Review (Garber, 1970) was administered in the homes of 153 poverty children at the time of entrance to kindergarten in two different communities. Each child in the longitudinal traced sample was administered a standardized reading test at the end of kindergarten, first and second grade. Step-wise multiple regression analysis revealed that the home environment variables did account for a significant portion of variance in reading achievement at each of the three grade levels. The results were discussed in terms of the differences and similarities in predictive equations for the communities and the implications for intervention programming.